IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A data processing device ~~(3)~~ for reconstructing the current flow in a vessel system ~~(6)~~, comprising a memory ~~(4)~~ with measurement data (m_i) describing an observed progressive propagation of a medium in the vessel system ~~(6)~~, wherein the data processing device ~~(3)~~ is equipped to reconstruct, from the measurement data, a model propagation (t_i) of a medium within the vessel system in such a way that, for the vessel system:

- ~~the~~ a difference between ~~the~~an observed propagation and ~~the~~a model propagation is minimal, and

- ~~the~~a model propagation is monotonously progressive.

2. (original) A data processing device as claimed in claim 1, equipped to reconstruct the model propagation (t_i) in such a way that it additionally has as smooth as possible a progression.

3. (currently amended) A data processing device as claimed in claim 1, ~~characterized in that~~wherein the memory ~~(4)~~ contains, as measurement data, bolus arrival times mi, wherein i=1,...N are indices for various individual sections of the vessel system ~~(6)~~, and a bolus arrival time mi is ~~the~~ a time, determined in a measurement, which a medium requires, starting from a predetermined starting point, to reach vessel section i.

4. (currently amended) A data processing device as claimed in claim 3, ~~characterized in that it~~wherein the device is equipped to calculate model bolus arrival times (t_i) for the vessel sections i in such a way that:

$$\Delta_i = t_i - t_{p(i)} \geq 0 \quad \forall\, i = 1,...N-1 \qquad (1)$$

and the cost function

$$E = \sum_{i=1}^{N} |m_i - t_i| \qquad (2a)$$

is minimal, wherein the values p(i) each hereby reflect the index of the vessel section located in front of vessel section i in ~~the~~a direction of flow.

5. (currently amended) A data processing device as claimed in claim 4, ~~characterized in that~~wherein it is equipped additionally to take into account in the cost function the variable:

$$E_m = \sum_{i \in I} \left| t_i'' \right| \qquad (2b)$$

wherein I contains the indices of all vessel sections with a predecessor and a successor, and t_i'' is the discrete approximation of the second derivative in vessel section i.

6. (currently amended) A data processing device as claimed in claim 4, ~~characterized in that~~wherein it is equipped to calculate the model bolus arrival time (t_i) using linear programming.

7. (currently amended) A data processing device as claimed in claim 1, ~~characterized in that~~wherein it is coupled with a display device ~~(7)~~ in order that the model propagation may be graphically represented.

8. (currently amended) An assembly for observation of the current flow in a vessel system ~~(6)~~, comprising an image-generating device ~~(1)~~ for generating images of the vessel system ~~(6)~~, from which measurement data (m_i) describing the progressive propagation of a medium may be obtained, and a data processing device ~~(3)~~ as claimed in claim 1 for reconstructing the current flow in the vessel system.

9. (currently amended) An assembly as claimed in claim 8, ~~characterized in that~~ wherein the image-generating device is an X-ray apparatus ~~(1)~~.

10. (currently amended) A method of reconstructing the current flow in a vessel system ~~(6)~~, comprising the following steps:

a) Obtaining measurement data (m_i) describing an observed progressive propagation of a medium in the vessel system ~~(6).~~;

b) Reconstructing a model propagation (t_i) of a medium in the vessel system in such a way that:

- ~~the~~a difference between ~~the~~an observed propagation and ~~the~~a model propagation is minimal, and

- ~~the~~a model propagation is monotonously progressive.